## REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Official Action dated March 24, 2006. In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

Claims 1-19 are under consideration in this application. Claims 3-6 and 9-10 are being amended, as set forth in the above marked-up presentation of the claim amendments, in order to more particularly define and distinctly claim applicants' invention. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Formality Rejection

Claims 5-6, 10 and 16-18 were rejected under 35 U.S.C. § 112, first paragraph, as not being enabled by the specification, and claims 3-6 and 9-10 were objected to as being difficult to understand due to confusing language therein.

Regarding "**elastic matching** of one-dimensional features strings" recited in claims 5-6 and 10, it is described on page 16, last paragraph (continuing to page 17) of the specification. "*The character string features in an image obtained in this way are subjected (at step 304 of the flow shown in Fig. 3) to the calculation of similarity to the features of the user-entered character string (step 303). Thus, they are subjected to, i.e., feature matching. For this purpose, elastic matching in only one dimension is sufficient. One of various high speed techniques, typically represented especially the DP (dynamic programming) matching, can be applied as a method of one-dimensional elastic matching.*" The term "elastic matching" is a technical term known to one skilled in the art. An Internet search with the keywords "elastic matching" via the Yahoo search engine provides more than 2500 results, such as http://citeseer.ist.psu.edulcontext/413169/0 which mentions "a classic elastic matching algorithm ...by dynamic programming". Regarding claim 16, the feather of "extracting a character image feature string etc. by **counting a number of edges**" is described as that "*feature extraction... edge concentration*" on page 8, 3rd paragraph, "*at step 203, lines [edges] with a width in a*

*specific range are extracted*" page 9 lines 10-15, steps 203-205 in Fig. 2, "*By having information in the y direction, out of the two dimensions of x and y, represented by the number of "edges" whose value is unaffected by luminance change from inside to outside of the predetermined range, the image features of a character string are expressed in the one-dimensional feature string.*" page 16, lines 12-19, and Fig. 10. In these descriptions, the word "edge" and the word "line" are interchangeable.

Regarding claim 17, the feature of "**removing line border blurring by correcting a border pixel luminance value into a maximum or minimum luminance value of adjacent pixels**" is described as that "*the purpose is to remove border blurring, the correction can as well be focused only on the borders, i.e. the parts constituting edges, for fast processing.... This filtering unifies the intermediate luminance value occurring on the border and the luminance value of either pixel constituting the border to make the border definite.*" On page 10, line 11 to page 11, line 4 (filtering at step 202 of Fig. 2) and Fig. 4, especially page 10, lines 14-16 and the mathematics expression on page 10.

Regarding claim 18, the relevant feature of "removing non-character background in the image by outlining the character region with a rectangle box having a sufficient margin, then removing pixels outside of the rectangle box" is described as that "*If the detected character region is embedded in a complex background with many edges, it is difficult to accurately separate characters from the background unless the characters are recognized and their shapes are defined. To remove as much of the background as possible in such a case, the inside of the character region is searched for pixels on the outlines of a rectangle wrapping the character region with a sufficient allowance as starting points, pixels of the same color and of equal luminance values are removed as elements of the background.*" on page 15, lines 8-16. The feature of "the outputting step outputs the character region with the rectangle box" is described as that "*each character region alone is expanded and displayed in a separate box 702*" on page 18 lines 3-5 and depicted in Fig 11.

Regarding claims 3 and 9, the feature of these claims is described on page 11, line 12 to page 12, line 2 and depicted in Fig. 5.

Regarding claim 4, the feature of the claim is described on P.12 lines 3-12 and depicted in Fig 5.

Regarding claims 5 and 10, the feature of these claims is described on page 16, line 12 to page 17, line 12, and depicted in Fig. 10.

Regarding claim 6, the feature is described on page 16, lines 20-22.

As indicated, the claims are being amended as required by the Examiner and fully supported by the Specification as noted. Accordingly, the withdrawal of the outstanding informality rejection is in order, and is therefore respectfully solicited.

Allowable Subject Matter

Claim 17 would be allowed if rewritten to overcome the 112 rejection.

Prior Art Rejection

Claims 1-14 and 18-19 were rejected under 35 USC § 103(a) as being unpatentable over an article entitled "Recognizing Characters in Scene Images" by Ohya et al. (hereinafter "Ohya") in view of US Pat. No. 6,665,668 Sugaya et al. (hereinafter "Sugaya"), and against claim 15 over Ohya and Sugaya in view of an article entitled "A Method for Recognizing Character Strings from Maps Using Linguistic Knowledge" by Akira et al. (hereinafter "Akira"). These rejections have been carefully considered, but are most respectfully traversed, as more fully discussed below.

The method for searching at least one character string image (e.g., "大統領選 混迷续く" in Figs. 10-12) embedded in an image (e.g., 701 in Fig. 11 or 800 in Fig. 12) of the invention (for example, the embodiment depicted in Figs. 3 & 11), as now recited in claim 1, comprising: providing the image; detecting a character region 702 in the image based upon a shape thereof; extracting a first **image** feature (e.g., the image of "大使館" in a box 703) of the character region 702; receiving an input of a *character string* of interest by a user (e.g., "大統領" in a text input region 706 for keyword entry in Fig. 11; p.7, line 17); extracting a second **image** feature (e.g., the image of "大統領") from the input character string; comparing the first **image** feature with the second **image** feature to determine a level of similarity 704 (e.g., 47%); and outputting the character region 702 or the input image 701 comprising the character region 702 based on the level of similarity.

The invention recited in claim 7 is directed to an apparatus for searching character string images in an image according to the method recited in claim 1.

The invention recited in claim 11 is directed to a program stored on a computer readable medium for processing of a character search in an image according to the method recited in claim 1.

The invention searches scenes/images comprising a user input keyword (a character sting) by the steps of : (A) receiving a character string entered by a user; (B) extracting a 2nd image feature from the entered character sting IMAGE; (C) comparing IMAGE features of the 1st and 2nd character strings (especially the image features in the vertical and horizontal directions). Especially, comparison of the character strings is done by using the "image feature" (feature of string shape ex. Fig 10) thereof. In other word, the invention treats the character sting as an image through the process, and compare at the level of the ***image*** features, i.e. the geometrical shape of the characters, and never recognizing each character as text/code or text-matching based on the recognition texts/codes, i.e., at a ***text***-to-text level (or ***code*** to code level).

In contrast to the prior art (p. 2, lines 1-20), the present invention is advantageous in that it does not need to perform character recognition in order to match the user-input with a section of the image, such that no recognition dictionary or language-based knowledge database is necessary. The user simply inputs a character string, which is converted into an image by the invention, and extracted "the second image feature" therefrom to match with a character string image.

In contact, Ohya recognizes/extracts each *character* in an character string "*by a character recognition process* (p. 216, col. 1, 6th line from the bottom"), e.g., "U", "C", "0" in Fig. 6 Example of extracting and recognizing characters" on p. 219). Ohya then extracts a plurality of character candidates from a dictionary for each character (p. 216, Section B. "Detecting Character Candidate Regions") to decide the recognition result. As admitted by the Examiner (p. 4, 5th line form the bottom of the outstanding Office Action), Ohya does not receive a user input entry as the (A) feature.

Contrary to the Examiner's assertion, Applicants respectfully contend that Ohya does not compare IMAGE features of the 1st and 2nd character strings. Therefore, In other words, Ohya only recognizes each character in a character string in ***text/code***, but not "comparing ***images or image features*** the character strings" as the invention.

Sugaya was relied upon by the Examiner (p. 4, last paragraph of the outstanding Office Action) to teach "searching string image". Again, contrary to the Examiner's assertion, Sugaya does not even mention the word "image" once in the whole disclosure, much less about "comparing ***images or image features*** the character strings" as the invention. Sugaya receives a character string to be used for a search, and the search is performed against text documents at a text-to-text level.

Akira only relates to how to recognize character from the map and fails to compensate for Ohya's deficiencies.

Applicants contend that none of the cited references or their combinations teaches or discloses each and every feature of the present invention as disclosed in independent claims 1, 7 and 11. As such, the present invention as now claimed is distinguishable and thereby allowable over the rejections raised in the Office Action. The withdrawal of the outstanding prior art rejections is in order, and is respectfully solicited.

Finality of Office Action

As to the finality of the outstanding rejections, Applicant respectfully requests the Examiner to withdraw the premature finality of the rejections. Applicant contends that the Examiner's Response to Applicants' argument was only directed to the enable rejections, claim objection, and a new prior art reference was cited. As the alleged non-enable claims were in fact fully supported by the specification and the new reference still fails to address to the image-feature comparing step emphasized the prior response, the withdrawal of the premature finality of the rejections is duly solicited such that the examiner is requested to further consider the merits of this application.

Conclusion

In view of all the above, clear and distinct differences as discussed exist between the present invention and the prior art references upon which the rejections in the Office Action rely, Applicant respectfully contends that the prior art references cannot anticipate the present invention or render the present invention obvious. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of

the above-captioned application, the Examiner is invited to contact the Applicant's undersigned representative at the address and telephone number indicated below.

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